

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of: Khandros et al.
Application No.: Not known
Filing Date: October 4, 2001
For: ELECTRONIC COMPONENT
OVERLAPPING DICE OF
UNSINGULATED SEMICONDUCTOR
WAFER

Examiner: Not Known
Group Art Unit: Not Known

PRELIMINARY AMENDMENT

Box: Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination of the above-identified patent application filed concurrently herewith, please amend the application as follows:

In the Title:

Please replace the current title with the following title:

--ELECTRONIC COMPONENT OVERLAPPING DICE OF UNSINGULATED
SEMICONDUCTOR WAFER--

In the Specification:

Please replace the paragraph on page 1, lines 8-22 with the following paragraph:

This application is a continuation of application serial no. 09/114,589, filed July 13, 1998.

In the Claims:

Please cancel claim 1 without prejudice.

Please add new claims 47-71 as follows:

47. (New) A method comprising:

attaching an electronic component to at least two dice of an unsingulated semiconductor wafer, said electronic component overlapping said at least two dice;

singulating said semiconductor wafer into individual dice and thereby also singulating said electronic component such that a first portion of said electronic component remains attached to one of said at least two dice and a second portion of said electronic component remains attached to another of said at least two dice.

48. (New) The method of claim 47, wherein said electronic component comprises a capacitor.

49. (New) The method of claim 48, wherein said first portion of said capacitor is larger than said second portion of said capacitor.

50. (New) The method of claim 48, wherein said first portion of said capacitor has a greater capacitance than said second portion of said capacitor.

51. (New) The method of claim 48, wherein said attaching step further comprises attaching a plurality of capacitors to dice of said unsingulated semiconductor wafer, each of at least two of said capacitors overlapping at least two of said dice.

52. (New) The method of claim 51, wherein each of said plurality of capacitors overlaps at least two of said dice.

53. (New) The method of claim 47, wherein said electronic component comprises a housing and said housing overlaps said at least two dice.

54. (New) The method of claim 47, wherein said electronic component is attached to said at least two dice by resilient contact elements.

55. (New) The method of claim 54, wherein said resilient contact elements are elongate.

56. (New) The method of claim 47, wherein said singulating step comprises cutting said semiconductor wafer along scribe lanes between said dice and correspondingly cutting said electronic component.

57. (New) A semiconductor device comprising:

an unsingulated semiconductor wafer comprising a plurality of dice;
an electronic component attached to at least two of said dice, said electronic component overlapping said at least two dice.

58. (New) The semiconductor device of claim 57, wherein said electronic component comprises a capacitor.

59. (New) The semiconductor device of claim 58, wherein a first portion of said capacitor that overlaps one of said at least two dice is larger than a second portion of said capacitor that overlaps another of said at least two dice.

60. (New) The semiconductor device of claim 58, wherein a first portion of said capacitor that overlaps one of said at least two dice has a larger capacitance than a second portion of said capacitor that overlaps another of said at least two dice.

61. (New) The semiconductor device of claim 58 further comprising a plurality of said capacitors.
62. (New) The semiconductor device of claim 57, wherein said electronic component comprises a housing and said housing overlaps said at least two dice.
63. (New) The semiconductor device of claim 57, wherein said electronic component is attached to said at least two dice by resilient contact elements.
64. (New) The semiconductor device of claim 63, wherein said resilient contact elements are elongate.
65. (New) The semiconductor device of claim 57 further comprising a plurality of said electronic components.
66. (New) The semiconductor device of claim 57, wherein said semiconductor wafer further comprises scribe lanes between said dice, and said electronic component overlaps at least one of said scribe lanes.
67. (New) A semiconductor device comprising:
an unsingulated semiconductor wafer comprising a plurality of dice;
circuit element means for affecting an electrical signal, said circuit element means attached to at least two of said dice, said circuit element means overlapping said at least two dice.

68. (New) The semiconductor device of claim 67, wherein a first portion of said circuit element means that overlaps one of said at least two dice differs from a second portion of said circuit element means that overlaps another of said at least two dice.

69. (New) The semiconductor device of claim 67 further comprising a plurality of said circuit element means.

70. (New) The semiconductor device of claim 67 further comprising electrical connection means for attaching said circuit element means to said at least two dice.

71. (New) The semiconductor device of claim 67, wherein said semiconductor wafer further comprises scribe lanes between said dice, and said circuit element means overlaps at least one of said scribe lanes.

REMARKS

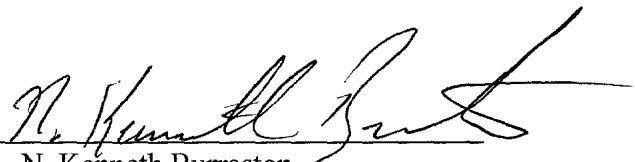
By this Preliminary Amendment, claim 1 has been cancelled (claims 2-46 are cancelled in the Utility Patent Application Transmittal paper submitted herewith), and claims 47-71 have been newly added. Claims 47-71 are now pending in the application. At least Figure 4B and its accompanying text support the new claims. In addition, the specification has been amended to delete certain claims of priority. Examination of the application as amended is respectfully requested, and an early notice of allowance is solicited.

In the Utility Patent Application Transmittal paper submitted herewith, Applicants have authorized payment of fees for the filing of the new continuation application. Although Applicants believe that no additional fees are due, Applicants hereby authorize the Commissioner to charge any additional fees due in connection with the filing of this paper to Deposit Account No. 50-0285 (order no. P64D1-US).

Respectfully submitted,

Date: October 4, 2001

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VERSION WITH MARKINGS TO SHOW CHANGES

The paragraph on page 1, lines 8-22 has been changed as follows:

This application is [a continuation-in-part of co-pending application Serial No. 08/340,144, filed November 15, 1994, entitled "Contact Structure for Interconnections, Interposer, Semiconductor Assembly", inventors Khandros and Mathieu, commonly assigned with the present application. This application also is a continuation in part of a co-pending, commonly assigned patent application filed June 30, 1998 by inventors Khandros, Mathieu, Eldridge, Grube and Dozier, which co-pending application is a divisional/continuation of U.S. Patent Application Serial No. 08/533,584, which issued as U.S. Patent No. 5,772,451. This application also is a continuation in part of co-pending, commonly assigned application Serial No. 08/955,001, filed October 20, 1997, entitled "Electronic Component With Terminals And Spring Contact Elements Extending From Areas Which Are Remote From The Terminals", inventors Eldridge, Khandros, Mathieu, and Pedersen. This application is also a continuation-in-part of co-pending application Serial No. 08/457,479, filed June 1, 1995 which is a divisional application from the application which issued as U.S. Patent No. 5,476,211] a continuation of application serial no. 09/114,589, filed July 13, 1998.